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A-S

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/098,730	06/18/98	SUGIYAMA T	PM-254782

IM22/1122

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EXAMINER	
TUNG, T	
ART UNIT	**PAPER NUMBER**
1743	7

DATE MAILED: 11/22/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)	
09/098,730	SUGIYAMA ET AL	
Examiner	**Group Art Unit**	**Paper No.**
T. TUNG	1743	7

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

P riod for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication .
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☑ Responsive to communication(s) filed on 10-12-99.

☑ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☑ Claim(s) 1-4 is/are pending in the application.

Of the above claim(s)_____ is/are withdrawn from consideration.

☐ Claim(s)_____ is/are allowed.

☑ Claim(s) 1-4 is/are rejected.

☐ Claim(s)_____ is/are objected to.

☐ Claim(s)_____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The proposed drawing correction, filed on_____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on_____ is/are objected to by the Examiner.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 11 9(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number)_____.

☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received:_____.

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s)._____

☐ Interview Summary, PTO-413

☐ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing R view, PTO-948

☐ Other_____

Office Action Summary

Claims 1-4 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The expression "each boundary layer being made of a heterogeneous material different from that of said substrate layers" added at lines 7-8 of claim 1 does not appear to have basis in the orginal disclosure. First, there is no direct statement in the specification that the boundary layer should be of a material different from the substrate layers. Second, from page 12, lines 1 and 14 of the specification, the boundary layer 10 and the insulating layer 24 both are disclosed to be made of alumina. Since the insulating layer 24 is a substrate layer, it would appear that the expression in question actually contradicts the original disclosure.

Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 7, "boundary layer being made of a heterogeneous material different from that of said substrate layers" is vague. It is still unclear if the expression means that a boundary layer is of a mixture of materials and thereby is "heterogeneous" or that the boundary layer is made of a single material that is different from the substrate layer material. Note further that a boundary layer can be made of a mixture and the mixture can also be different from the substrate material. The confusion is heightened by the fact that the original disclosure is not considered to

support the wording "material different from that of said substrate layers" as discussed in the preceding rejection.

Claim 1, line 14, "adjacent" is still considered to be indefinite. Applicant asserts that the term "adjacent" has the meaning as defined in Webster's Collegiate Dictionary, 10th ed., page 14, a copy of which has been submitted. However, the Dictionary definition has a broader meaning of "nearby" on the one hand and the narrower meaning of "immediately preceding or following" on the other hand. The first meaning would permit the presence of other intermediate layers, whereas the latter meaning would appear to preclude any such intermediate layer. It is not evident which meaning is that of applicant. Perhaps, applicant meant to include both meanings by "adjacent". Clarification is needed.

Claims 1, 2, 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Mase etal '274.

Applicant argues that layer 10 of Mase functions to blcok current leakage and does not serve the function of applicant's boundary layer.

This argument is totally non-persuasive. Applicant's boundary layer absorbs thermal shock and reduces thermal stress (see page 4, lines 4-6 of the specification). Mase's layer 10 is disclosed to do the same at col. 6, lines 17-25. That Mase's layer 10 is taught also to function as an insulator can not negate its function to reduce thermal stress. Besides, applicant's boundary layer, made of alumina, clearly would function as an insulator as well.

Applicant further argues that Mase does not disclose a plurality of boundary layers as called for in applicant's claims.

This argument is also not persuasive. In figure 5, Mase discloses a second porous alumina layer 42 (see col. 8, lines 1-14). Since layer 42 is the same as layer 10, it would stand to reason that layer 42 would fucntion in a similar manner. Thus, Mase is seen to have a boundary layer 10 between two solid electrolyte layers 8 and 22 as well as a second boundary layer 42 between a solid electrolyte layer 22 and an insulating layer 44. Similarly, figures 14, 16 and 20 of Mase each shows two boundary layers 106 and 138.

Claims 1, 2, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mase etal '274 or Mase etal '126.

Mase '126 has been discussed in the previous Office action. Applicant's claims differ by calling for a plurality of boundary layers.

If Mase '274 were somehow construed as not to disclose a plurality of boundary layers, applicant's claims differ in that respect.

It would have been obvious for either Mase to dispose a boundary layer between two solid electrolyte layers and between a solid electrolyte layer and an insulating layer, because the relief of thermal stress would be applicable and desirable between any and all adjacent substrate layers.

This rejection is prompted by applicant's Oct. 12, 1999 response amemding the claims.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mase etal '274 or Mase etal '126 in view of Suzuki etal.

Applicant argues that Suzuki's sensor is different from those of Mase and there is no basis to combine them. That is, Suzuki has only a single solid electrolyte in contrast with the multiple

solid electrolytes of Mase. Also, Suzuki's solid electrolyte is a cylindrical tube in contrast with Mase's planar solid electrolytes.

This argument is not persuasive. The shape and number of solid electrolyte members are totally irrelevant to the issue at hand and would not negate the combinability of the references. In Mase, since the boundary layer 10 (in '274) or 12 (in '126) is made porous in order to achieve its thermal stress relief characteristic (see col. 6, line 40 of '274 or col. 3, lines 65-67 of '126) in contrast to their neighboring nonporous substrates, it would have been obvious to provide larger sintering particles for the boundary layer than those of their neighboring substrates, because Suzuki teaches the use of coarser particles to obtain larger porosity.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The examiner can be reached at 703-308-3329. His supervisor Jill Warden can be reached at 703-308-4037. Any general inquiry should be directed to the receptionist at 703-308-0661. A fax number for TC 1700 is 703-305-7719.

Ta Tung

Primary Examiner

Art Unit 1743